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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/589,274	04/11/2008	Jin Ho Song	1455-062312	5731

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EXAMINER	
PALABRICA, RICARDO J	
ART UNIT	**PAPER NUMBER**
3663	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/589,274	SONG ET AL.	
	Examiner	Art Unit	
	Rick Palabrica	3663	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10/22/09*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3 and 5-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3 and 5-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Applicant's 10/22/09 Amendment, which directly amended claims 1, 2, 5 and 7, canceled claim 4, and traversed the rejection of claims in the 7/23/09 Office action, is acknowledged.

Applicant's arguments have been fully considered but they are not persuasive.

Response to Arguments

2. Applicant has amended Fig. 5 to show a coolant hole (21a) in the bottom of the outer retention vessel. Applicant argues that support for this amendment may be found "in the specification at page 6, paragraph [52].

The examiner disagrees.

In section 1 of the 7/23/09 Office action, the examiner emphasized that "no new matter should be entered" in the replacement drawing. Contrary to this provision, the amended Fig. 5 includes new matter.

The paragraph cited by applicant as support to the amended drawing states:

> *"The outer retention vessel 21 includes at least one coolant hole 21a formed in a side or bottom surface thereof." Underlining provided.*

The specification clearly discloses a generic location of the coolant hole in the bottom surface. On the other hand, the amended Fig. 5 shows the bottom coolant hole located away from the center of the bottom surface and closer to its edge, which is a species of the location of the hole. There is no support for this species of the bottom hole location in the as-filed application, and therefore constitutes new matter.

Accordingly, the objection of the drawings is maintained.

3. Applicant traversed the rejection of claims based on Tate et al. (and Kleimola, where necessary) on the ground that: a) Kleimola "does not disclose that inert gas is supplied form *[sic]* the compressed gas tank and mixed with coolant"; b) Tate "does not disclose that inert gas is supplied from accumulator tank (20) and fails to disclose that coolant is mixed with inert gas and mixture of coolant and inert gas being supplied to the accumulator tank (20)"; c) Tate "fails to teach or suggest a mixer including piping connecting to and extending from each of a compressed gas tank and a cooling water storage tank and the piping from the cooling water storage tank are connected, thereby mixing …"

The examiner disagrees.

As to argument a), Kleimola was not applied for the teaching that applicant alleges it does not disclose, but, rather, for a teaching on inert gas being supplied to an accumulator. Thus, the applicant has not shown that the references do not teach what the examiner has stated they teach, nor, has the applicant shown that the examiner's reasoning for and manner of combining the teachings of references is improper or invalid.

As to argument b):

First, the examiner reads Tate's accumulator tank (20) on applicant's "compressed gas tank" (see section 4 of the 7/23/09 Office action). Nowhere do the claims recite that the mixture of coolant and inert gas are being supplied to the

"compressed gas tank." Clearly, applicant is misrepresenting the examiner's rejection, and therefore argument b) has no basis.

Second, in the event of a core melt leading to failure of Tate et al.'s pressure vessel 2, the inert gas that is inherently mixed with, carried by, or entrained in the fluid from accumulator tank 20, inherently mixes with the coolant supplied from the suppression chamber 12 (the latter reading on applicant's "cooling water storage tank"). During the course of this accident, the inert gas from accumulator tank 20 and the coolant from suppression chamber 12 will inherently flow towards the containment sump the (latter reading on applicant's "molten retention tank.") Tate clearly meets the claim limitations.

As to argument c):

First, applicant's claim language reads on Tate et al. as follows (see Fig. 1): a) "piping connecting to and extending from a compressed gas tank" reads on piping 24; b) "piping connecting to and extending from a cooling water storage tank" reads on piping 22 from suppression chamber 12. Piping 24 and piping 22 are indirectly connected to each other through pressure vessel 2. As presently set forth, that the term "connected" (claim 1) is recited broadly and includes both direct and indirect connection. Thus, the indirect connection of said two piping in Tate et al. is not precluded by the claims.

Second, the claim does not specify the amount of inert gas mixed with the coolant. Therefore, any amount of inert gas mixed with, carried by, or entrained in the fluid from accumulator tank 20 of Tate et al. reads on the claim limitation.

Third, as to the "thereby" clause, this denotes a consequence or result of an action or a condition. Tate et al. inherently meets this limitation because they meet the preceding condition of the piping from the compressed gas tank being connected to the piping from cooling water storage tank.

4. Applicant traversed applied art, Gabor, on the grounds that: a) "[t]he use of inert gas in Gabor is for detecting leaking in reactor pressure vessel (14)"; b) "Gabor fails to disclose coolant mixed with inert gas and a mixture of inert gas and a mixture of coolant and inert gas being supplied into the steel liner (32)"; c) Gabor "fails to teach or suggest a mixer including piping connecting to and extending from each of a compressed gas tank and a cooling water storage tank and the piping from the cooling water storage tank are connected, thereby mixing …"

The examiner disagrees.

As to argument a), the claims are directed to an apparatus and NOT to a process. If the inert gas in Gabor is capable of being used for the same purpose as in applicant's claim, which is the case for Gabor, then the latter meets the claim limitation. Also, just because the inert gas in Gabor is used for detecting mechanical trouble, as applicant alleges, does not mean it cannot also used for cooling of molten core material from a reactor. The claims do not limit the use of inert gas to a single purpose.

As to argument b), in the event of a core melt leading to failure of pressure vessel, causing the break or opening 48 in Gabor (see Fig. 1), the inert gas inherently

mixes with the coolant supplied from the expedient for providing cooling water to the porous bed (the latter expedient reading on applicant's "cooling water storage tank").

As to argument c), applicant's claim language reads on Gabor as follows: a)"piping connecting to and extending from a compressed gas tank" reads on piping of the expedient for providing inert gas to the inner volume of the reactor; b) "piping connecting to and extending from a cooling water storage tank" reads on piping of the expedient for providing cooling water to the porous bed. The piping in a) and b) are indirectly connected to each other through pressure vessel.

5. Applicant traversed applied art, Alsmeyer, on the grounds that: a) "the apparatus of Alsmeyer uses only coolant and does not use inert gas"; b) "the use of inert gas in Gabor is for detecting leaking in the pressure vessel (14) due to mechanical trouble".

The examiner disagrees.

As to argument a):

First, it has been well settled that one cannot show nonobviousness by attacking references individually where the rejections are based on the combination of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800F.2d 1091, 231 USPQ (Fed. Cir. 1986).

Second, while it is true that Alsmeyer uses only coolant, the examiner has demonstrated in the 7/23/09 Office action, why it would have been advantageous to an artisan to modify Alsmeyer by the teaching in Gabor to also include an inert gas in the containment (see section 4 of said Office action).

As to argument b), see examiner's response in section 4 above.

Thus, applicant's arguments against the Alsmeyer-Gabor combination are unpersuasive because the applicant has not shown that the references do not teach what the examiner has stated they teach, nor, has the applicant shown that the examiner's reasoning for and manner of combining the teachings of references is improper or invalid.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-3 and 5-9 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The new matter pertains to the limitations, "supplying inert gas under pressure." (claim 1) and preventing "backflow of gas under pressure" (claim 7). The new limitation, "under pressure", means any and all pressure values, i.e., not only the so-called high pressure disclosed in the original specification. Thus, the new matter refers to pressures other than "high pressure."

Additional new matter pertains to the limitation, "layer of sacrificial and water tight cemented on a surface of the protection vessel."

7. Claims 1-3 and 5-9 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for "supplying high pressure inert gas" and preventing "backflow of high pressure gas", does not reasonably provide enablement for said supplying inert gas and preventing backflow of gas at any and all pressures. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make/use the invention commensurate in scope with these claims.

8. Claims 1-3 and 5-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims are vague, indefinite and incomplete and their metes and bounds cannot be determined because the claims are inconsistent with the specification in regard to the pressure at which the inert gas is supplied, the pressure of the gas prevented from back flowing, and layer of sacrificial and water tight cemented on a surface of the protection vessel.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over either one of Tate et al. (U.S. 5,309,489) alone or Gabor et al. (U.S. H91) alone or Alsmeyer et al. (U.S. 6,658,077) in view of Gabor.

The reasons are the same as those stated in section 4 of the 7/23/09 Office action, as further clarified in sections 3-5 above, which reasons are herein incorporated.

10. Claims 2, 3, and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over either one of Gabor et al. alone or the combination of Alsmeyer et al. and Gabor.

The reasons are the same as those stated in section 5 of the 7/23/09 Office action, as further clarified in sections 3-5 above, which reasons are herein incorporated. The gravel in the above references will be sintered during the course of an accident, e.g., a core melt, where said gravel may not be sintered originally. The claims neither specify the degree of sintering nor the time when the gravel is sintered. Thus, the above reference meets the claim limitations.

11. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Alsmeyer et al. and Gabor.

The reasons are the same as those stated in section 6 of the 7/23/09 Office action, as further clarified in sections 3-5 above, which reasons are herein incorporated.

12. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tate et al.

The reasons are the same as those stated in section 7 of the 7/23/09 Office action, as further clarified in sections 3-5 above, which reasons are herein incorporated.

13. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over either one of Gabor et al. alone or the combination of Alsmeyer et al. and Gabor, and further in view of either one of Hau et al. (U.S. 6,192,097) or Gou et al. (U.S. 6,353,651).

Either one of Hau et al. or Gou et al. teach that it is old and advantageous to include a layer of sacrificial and water tight material to the protection vessel (see Abstract in Hau et al. or col. 3, lines 36+ in Gou et al.).

Therefore, adding a layer of sacrificial and water tight material to the protection vessel in the above references would have been obvious to one of ordinary skill in the art at the time of the claimed invention because it would provide added protection (e.g., thermal shock barrier) and leak-tightness to said vessel.

Conclusion

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rick Palabrica whose telephone number is 571-272-6880. The examiner can normally be reached on 6:00-4:30, Mon-Thurs.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on 571-272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Rick Palabrica/ January 4, 2010
Primary Examiner, Art Unit 3663